

## CLAIMS:

1. An apparatus for assisting navigation in a vessel (2), comprising
  - a) a sensor probe (3) for acquiring local images (5, 10) that characterize the vessel (2) at the point where the particular local image is made, which sensor probe (3) can be moved along the vessel (2),
  - 5 b) a memory (8) for storing a sequence of local images (5) that is obtained in the course of the movement of the sensor probe (3) along the vessel (2),
  - c) a data-processing unit (7) that is arranged to sort a further local image (10) of the vessel (2) into the sequence that is stored in the memory (8).
- 10 2. An apparatus as claimed in claim 1, characterized in that the sensor probe is an intravascular ultrasound system (3) or a means for performing optical coherence tomography.
3. An apparatus as claimed in claim 1, characterized in that it has a means (9) for moving the sensor probe (3) along the vessel (2) at a defined and preferably constant speed.
- 15 4. An apparatus as claimed in claim 1, characterized in that it comprises a display (6) for showing a stored sequence of local images (5), and in that the data-processing unit (7) is arranged to indicate on the display (6) the position of the sensor probe (3), and/or the position of an instrument (11) that is in a known position relative to the sensor probe (3).
- 20 5. A method of assisting navigation in a vessel (2), comprising
  - a) movement, along the vessel (2), of a sensor probe (3) for making local images (5, 10) that characterize the vessel (2) at the point where the particular local image is made,
  - b) generation and storage of a sequence of local images (5) during the movement
  - 25 of the sensor probe (3),
  - c) sorting of a further local image (10), which is preferably made by the sensor probe (3), into the sequence.

6. A method as claimed in claim 5, characterized in that the local images are cross-sectional intravascular ultrasound images (5, 10) of the vessel (2) or optical coherence tomographic images thereof.

5 7. A method as claimed in claim 5, characterized in that the movement in step a) takes place at a defined speed and the generation of local images (5) in step b) takes place at a defined rate.

8. A method as claimed in claim 5, characterized in that the further local image  
10 (10) is assigned to one, or two adjoining, images in the sequence with which the similarity of the further local images (10) is greatest.

9. A method as claimed in claim 5, characterized in that step c) is performed repeatedly for a series of further local images (10), with the search for a sorted position in the  
15 sequence held in store, for an image in this series, beginning in each case at the sorted position of the previous further local image in the series.

10. A method as claimed in claim 5, characterized in that the local images in the sequence are shown on a display (6) in line with their positions along the vessel (2), as also is  
20 the sorted position (10') of the further local image (10).